

Understanding Diabetes Self-Care: Knowledge and Practice Patterns Among Adults with Type 2 Diabetes at Federal Medical Centre Bida

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Abstract

DOI: <https://doi.org/10.64052/nxc8mb11>

Background: Effective diabetes self-management is an important component of achieving and maintaining glycaemic control and reducing the risk of diabetes-related complications. Assessing patients' knowledge and self-management behaviours may help identify areas requiring improvement, particularly in resource-limited settings. To assess diabetes self-care knowledge and self-management practices and determine their association with glycaemic control among adults with type 2 diabetes mellitus attending the General Outpatient Clinic of Federal Medical Centre, Bida.

Methods: An analytical cross-sectional study was conducted among 70 adults with type 2 diabetes mellitus attending the General Outpatient Clinic of Federal Medical Centre, Bida. Data were collected on sociodemographic and clinical characteristics, diabetes self-care knowledge, self-management practices and glycaemic control. Diabetes self-care knowledge was assessed using the Diabetes Self-Care Knowledge Questionnaire (DSCK-30), while self-management practices were assessed using the 16-item Diabetes Self-Management Questionnaire (DSMQ). Glycaemic control was classified as good when HbA1c was <7.0% and poor when HbA1c was ≥7.0%. Descriptive statistics and Chi-square tests were used to assess associations between categorical variables, with statistical significance set at $p < 0.05$.

Results: The mean age of respondents was 57 ± 11 years, and 46 (65.7%) were female. Of the 70 participants, 45 (64.3%) had good diabetes self-care knowledge, and 60 (85.7%) demonstrated optimal self-management practices. Good glycaemic control (HbA1c <7.0%) was achieved by 22 (31.4%) participants, while 48 (68.6%) had poor glycaemic control. Self-care knowledge was significantly associated with both self-management practices ($\chi^2 = 5.973$, $p = 0.015$) and glycaemic control ($\chi^2 = 13.576$, $p < 0.001$).

Conclusion: Most respondents had good diabetes self-care knowledge and reported optimal self-management practices, although good glycaemic control was achieved by less than one-third. Diabetes self-care knowledge was associated with self-management practices and glycaemic control. However, the cross-sectional design and unadjusted analysis preclude causal inference. The coexistence of relatively good reported self-management with poor glycaemic control suggests that factors beyond self-care knowledge and reported behaviour may contribute to glycaemic outcomes.

Keywords: Type 2 diabetes mellitus; diabetes self-care knowledge; self-management practices; glycaemic control; HbA1c; Diabetes Self-Management Questionnaire.

Introduction

Diabetes mellitus (DM) is a chronic metabolic disorder marked by persistent hyperglycaemia resulting from absolute insulin deficiency (type 1) or relative insulin insufficiency with peripheral resistance (type 2).^{1,2} Sustained hyperglycaemia provokes micro- and macrovascular sequelae—retinopathy, nephropathy, neuropathy, coronary and peripheral artery disease, stroke, non-traumatic limb amputation, erectile dysfunction, and end-stage renal disease.^{3,4} The World Health Organisation (WHO) diagnoses DM when fasting plasma glucose ≥ 126 mg/dL (7.0 mmol/L), 2-h post-load glucose ≥ 200 mg/dL (11.1 mmol/L), or random plasma glucose ≥ 200 mg/dL (11.1 mmol/L) in a symptomatic patient.⁵

A United Nations resolution classifies diabetes as a chronic, debilitating, and costly disease posing serious threats to individuals, families, and nations.⁶ It is among the most common non-communicable diseases (NCDs), ranking fourth as a cause of death in high-income countries and reaching epidemic levels in many developing nations.^{7,8} Globally, DM is the sixth leading cause of death, with prevalence rising exponentially: 422 million adults were affected in 2014, and the figure could reach 642 million by 2040.⁹ Sub-Saharan Africa had ~14 million cases in 2015¹⁰ while pooled Nigerian prevalence is 5.77% but varies regionally (3.0%–9.8%).¹¹

Most new cases are type 2, fuelled by rising overweight/obesity, sedentary urban lifestyles, unhealthy diets, and population ageing.^{11,12} In 2017, DM caused ~5 million deaths (9.9% of global mortality) and consumed USD 727 billion in health-care expenditure, projected to surpass USD 776 billion.¹²

Optimal management is multidisciplinary—physicians, nurses, dietitians, physiotherapists, podiatrists, and diabetes educators—and integrates pharmacologic therapy with lifestyle modification.^{5,7} The shared goals are symptom relief, durable glycaemic control, and prevention or delay of complications through Diabetes Self-Management Education (DSME), Diabetes Self-Management Support (DSMS), and patient-centred care.⁷

Because diabetes is lifelong and day-to-day decisions occur outside clinic walls, adherence to medical advice alone is insufficient; sustained self-care is the cornerstone of control.¹³ Glycated haemoglobin (HbA1c) is the preferred measure of long-term glycaemia, reflecting average exposure over ~3 months.^{14,15}

Self-care is “an individual's ability to manage symptoms, treatment, lifestyle changes, and psychosocial consequences of a health condition in partnership with family, community, and professionals.”¹⁶ In diabetes, this encompasses activities patients

perform to control the condition with provider support, aligning with the patient-centred care model.¹³ The American Diabetes Association lists six core behaviours: healthy eating, physical activity, blood-glucose monitoring, medication adherence, risk-reduction (e.g., foot care, smoking cessation), and ongoing psychosocial assessment.¹⁷ Robust evidence links consistent self-care with improved HbA1c, reduced complications, and lower costs.^{15,16}

Nevertheless, diabetes and its sequelae impose heavy burdens on patients, families, societies, and health systems. Meeting the long-term needs of people with chronic diseases is a major contemporary challenge.^{18,19} Africa is projected to see cases rise from 15.9 million (2021) to 41.6 million by 2045, with 70 % undiagnosed.²⁰ Type 2 DM constitutes 90–95 % of clinic cases²¹ and is particularly costly to manage in low- and middle-income countries, where rising incidence driven by demographic and lifestyle transitions threatens to escalate expenditure further.²⁰

While pharmacologic advances continue, there is still no cure; lifelong medication plus healthy behaviours remain the route to optimal glucose control, complication prevention, and quality-of-life gains.^{15,16}

Yet Nigerian data on how self-care practices influence glycaemic control are limited, underscoring the need to explore knowledge, patterns, determinants, and outcomes of self-care in local populations. Understanding these relationships can inform culturally appropriate interventions that empower patients, curb complications, and relieve the growing socio-economic burden of diabetes in Nigeria.

This study was undertaken to assess diabetes self-care knowledge and self-management practices, including glucose management, dietary control, physical activity and healthcare use, and their association with glycaemic control among adults with type 2 diabetes mellitus attending the GOPC at FMC Bida, using the Diabetes Self-Care Knowledge Questionnaire (DSCK-30) and the Diabetes Self-Management Questionnaire (DSMQ).

Methods

Study Site

The study was conducted at the Federal Medical Centre (FMC), Bida, located in Bida town, the headquarters of Bida Local Government Area in Niger State, Nigeria. The town spans about 50 square kilometres and has a projected population of 280,667 in 2023, calculated from the 2006 census (185,553) using an annual growth rate of 3.0%.²² Bida is 85 km west of Minna, the state capital, and is predominantly inhabited by the Nupe ethnic group, with Islam as the major religion.

FMC Bida, a 200-bed tertiary facility, is the largest hospital in the state, offering services across all medical and surgical specialties. It also provides

various training programs, including basic/post-basic nursing and postgraduate medical training. The study was specifically carried out in the Non-Communicable Disease (NCD) sub-clinic of the General Out-Patient Clinic (GOPC), which holds clinics every Tuesday and manages about 100 diabetic patients monthly.

Study Population

The target population comprised adults (aged ≥ 18 years) with type 2 diabetes mellitus attending the NCD/GOPC at FMC Bida.

Study Design

An analytical cross-sectional study design was adopted and conducted over three months from June to August 2022.

Sample Size Determination

The initial sample size was calculated using the Leslie Kish formula,²³ based on an estimated diabetes prevalence of 5.5% reported for North-Central Nigeria,¹¹ a 95% confidence level and 5% precision. This yielded an estimated sample size of approximately 80. Since the estimated eligible clinic population during the three-month study period was approximately 300, finite population correction was applied, yielding approximately 63 participants. Allowing for 10% anticipated non-response resulted in a final target sample size of 70.

The use of population diabetes prevalence as the parameter for the initial calculation was a limitation because all participants in the study were already diagnosed with type 2 diabetes. A sample-size calculation based on the prevalence of the principal outcome or an anticipated effect size would have been more appropriate.

$$n = Z^2 pq / d^2$$

Sampling Method

A systematic sampling method was used. With an average of 100 eligible diabetic adults per month (300 over three months), the sampling interval (K) was 4 (300/70). The first respondent was randomly selected by balloting among the first four on the attendance list. Every 4th eligible patient thereafter was recruited. Identification marks were placed on selected patients' records to prevent duplicate selection. Only patients who met the inclusion criteria and gave informed consent (written or thumb-printed) were included.

Inclusion Criteria

Adults (≥ 18 years) with type 2 diabetes attending the NCD/GOPC

On medication for at least 3 months

Provided informed consent

Exclusion Criteria

Patients with type 2 diabetes who were too ill to participate.

Study Protocol

Data collection involved the administration of a structured questionnaire by the principal researcher and two trained assistants (resident doctors). Information gathered included socio-demographic data, illness duration, medication history, and comorbidities.

HbA1c Estimation

Glycaemic control: HbA1c was measured using the Biohermes portable HbA1c analyser (A1C EZ 2.0), based on affinity chromatography. The device was calibrated weekly against the central laboratory's high-performance liquid chromatography analyser. Glycaemic control was classified using a prespecified two-category classification: good glycaemic control (HbA1c $< 7.0\%$) and poor

glycaemic control (HbA1c $\geq 7.0\%$).

Assessment Tools

Diabetes Self-Care Knowledge Questionnaire (DSCK-30): Diabetes self-care knowledge was assessed using the DSCK-30. Each correct response scored 1; scores $<70\%$ indicated low knowledge, and scores $\geq 70\%$ indicated high knowledge.

Diabetes Self-Management Questionnaire (DSMQ): Diabetes self-management was assessed using the original 16-item Diabetes Self-Management Questionnaire developed by Schmitt et al. The DSMQ assesses self-management behaviours over the preceding eight weeks and comprises four principal domains: Glucose Management, Dietary Control, Physical Activity and Health-Care Use. Items are rated on a four-point Likert scale from 0 (“does not apply to me”) to 3 (“applies to me very much”). Negatively worded items are reverse-scored so that higher scores indicate better self-management. Domain and total scores are calculated and transformed to a 0–10 scale using the raw score divided by the theoretical maximum score multiplied by 10. Item 16 contributes to the overall Sum Scale only. No formal local psychometric validation was undertaken. For this study, an overall transformed DSMQ score >6.0 was classified as optimal self-care, while a score ≤ 6.0 was classified as sub-optimal self-care. This categorisation was used as an operational classification for this study and should not be interpreted as a universally validated clinical threshold. Higher scores indicated better self-care practices.

Confidential identification codes were used to link questionnaire data to patient records, accessible only to the principal investigator.

Data Analysis

Data were manually verified for completeness, cleaned, and entered into SPSS version 24.

Univariate analysis: Frequencies and percentages

Bivariate analysis: chi-square test of independence

Results were presented in prose, tables, and charts as appropriate

Ethical Considerations

Approval was obtained from the Health Research Ethics Committee of FMC Bida. All participants received detailed information about the study and gave written or thumb-printed informed consent. Participation was voluntary, and withdrawal was allowed at any point without affecting clinical care. All personal data were anonymized using codes and kept confidential.

Results

Participant Recruitment

An average of 300 adult diabetic patients were seen at the General Outpatient Clinic of the Federal Medical Centre, Bida, from 2 June to 25 August 2022. Out of these, seventy (70) respondents were recruited, having satisfied the selection criteria and consented to participate. None of the respondents declined at any stage of the study.

Sociodemographic Characteristics of the Respondents

The ages of respondents ranged from 35 years to 80 years. The majority of the respondents were in the 61–70 years age group (34.3%), followed by the 51–60 years age group (30.0%), with a mean age (standard deviation) of 57 (± 11) years. There were 24 (34.3%) male and 46 (65.7%) female respondents, with a male-to-female ratio

of 1:1.9. The predominant tribe was Nupe, 52 (74.3%), and the main religion practised by the respondents was Islam, 52 (74.3%). Trading, 24 (34.3%), was the predominant occupation of the respondents, and most of them were married, 58 (82.9%). About 45.7% of the respondents had completed at least primary education (formal education), with 5.7% having no form of education. Most of the respondents, 39 (55.7%), lived below the current National minimum wage of ₦30,000. Details of the sociodemographic characteristics of respondents are shown in Table 1.

Table 1: Sociodemographic characteristics of the respondents

Characteristics	Frequency (n=70)	Percentage (%)
Age group (years)		
31–40	5	7.1
41–50	14	20.0
51–60	21	30.0
61–70	24	34.3
≥ 71	6	8.6
Gender		
Male	24	34.3
Female	46	65.7
Tribe		
Nupe	52	74.3
Hausa	6	8.6
Yoruba	4	5.7
Igbo	3	4.3
Others	5	7.1
Occupation		
Civil servant	12	17.1
Trading	24	34.3
Artisan	3	4.3
Farming	7	10.0
Unemployed	24	34.3
Educational status		
Primary school	5	7.1
Secondary school	9	12.9
Tertiary	18	25.7
Islamic education	34	48.6
None	4	5.7
Average monthly income		
Below minimum wage ($< \text{₦}30,000$)	39	55.7
Minimum wage and above ($\geq \text{₦}30,000$)	31	44.3

Clinical Profile of the Respondents

The majority of respondents (91.4%) had been diagnosed within the preceding five years. About 65 (92.9%) were receiving pharmacological treatment, with oral hypoglycaemic agents (OHAs) alone being the most common modality (45.7%), followed by OHAs combined with lifestyle modification (44.4%). Hypertension was the most common comorbidity, occurring in 58.6% of respondents. Details of the clinical profile are shown in Table 2.

Table 2: Clinical profile of the respondents

	Frequency (n=70)	Percentage (%)
Duration of diabetes mellitus (months)		
1 – 12	9	12.9
13– 24	8	11.4
25– 36	15	21.4
37– 48	12	17.1
49 – 60	20	28.6
61 – 72	5	7.2
73– 84	1	1.4

Treatment modality

OHA alone	32	45.7
Insulin alone	1	1.4
Lifestyle alone	5	7.1
OHA and lifestyle	31	44.4
OHA, lifestyle and insulin	1	1.4

History of comorbidity

Yes	41	58.6
No	29	41.4

Comorbidity*

Hypertension alone	34	82.9
Hypertension and others	7	17.1

* This was analysed based on only the respondents who had a history of comorbidity (41)

Glycaemic Control of the Respondents

The mean $\pm$ standard deviation of HbA1c of the respondents was $7.9 \pm 1.83\%$. Twenty-two (31.4%) respondents had good glycaemic control (HbA1c $<7.0\%$), while 48 (68.6%) had poor glycaemic control (HbA1c $\geq 7.0\%$).

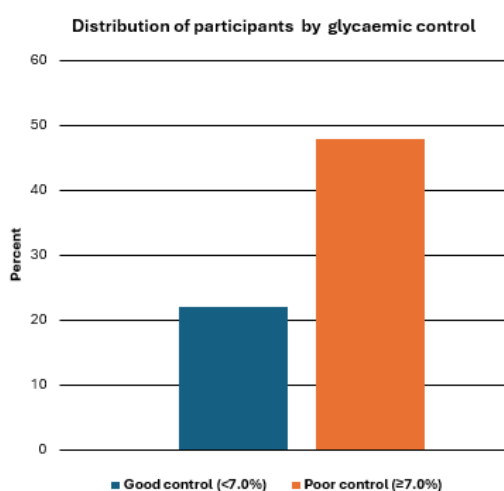


Figure 1: Distribution of participants by glycaemic control based on HbA1c.

Diabetes Self-Care Knowledge

The mean $\pm$ SD of the diabetes self-care knowledge score was 22.11 ± 3.74 . The majority of the respondents, 45 (64.3%), had good knowledge of diabetes self-care.

FIG 2: PATTERN OF DIABETES SELF-CARE KNOWLEDGE

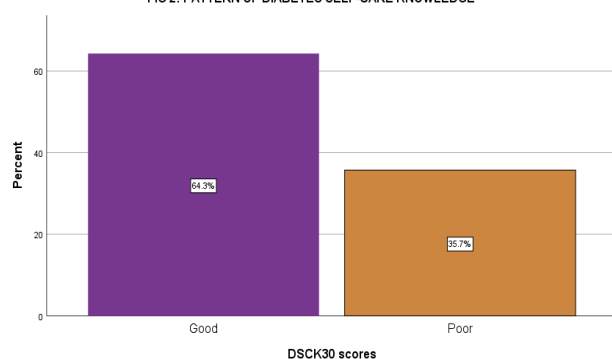


Figure 2: Bar chart showing the pattern of diabetes self-care knowledge.

Pattern of Diabetes Self-Management Practices

Overall, 60 (85.7%) respondents had optimal self-

management practices, while 10 (14.3%) had sub-optimal practices. Among the DSMQ domains, 65 (92.9%) had optimal Glucose Management, 43 (61.4%) had optimal Dietary Control, 43 (61.4%) had optimal Physical Activity, and 50 (71.4%) had optimal Health-Care Use.

Table 3: Pattern of self-management practices among respondents

Performance by domain	Frequency (n=70)	Percentage (%)
Overall Self-Management Performance		
Optimal	60	85.7
Sub-optimal	10	14.3
Performance in each DSMQ Domain		
Glucose management		
Optimal	65	92.9
Sub-optimal	5	7.1
Dietary control		
Optimal	43	61.4
Sub-optimal	27	38.6
Physical activity		
Optimal	43	61.4
Sub-optimal	27	38.6
Healthcare use		
Optimal	50	71.4
Sub-optimal	20	28.6

Self-Care

There was a statistically significant association between diabetes self-care knowledge and glycaemic control. Among respondents with good glycaemic control, 21 (95.5%) had good self-care knowledge, compared with 24 (50.0%) among those with poor glycaemic control ($\chi^2=13.576$, $p<0.001$).

Table 4: Association of diabetes self-care knowledge with self-management practices and glycaemic control

Variable	Diabetic Self-care Knowledge		Chi-square	p-value
	Good	Poor		
Diabetic Self-Care Practice				
Optimal	42 (70.0)	18 (30.0)	5.973	0.015
Suboptimal	3 (30.0)	7 (70.0)		
Glycaemic control (HbA1c)				
Good control (<7.0%)	21 (95.5)	1 (4.5)	13.576	<0.001
Poor control (≥7.0%)	24 (50.0)	24 (50.0)		

Discussion

Diabetes mellitus remains an important public health challenge, particularly in low- and middle-income countries. Effective management requires sustained self-management behaviours, treatment adherence, healthy dietary practices, physical activity and regular healthcare engagement.^{24,25} This study assessed diabetes self-care knowledge and self-management practices and their association with glycaemic control among adults with type 2 diabetes attending the General Outpatient Clinic of Federal Medical Centre, Bida. Overall, 64.3% had good self-care knowledge and 85.7% had optimal self-management practices, but only 31.4% achieved good glycaemic control. Good self-care knowledge was significantly associated with both optimal self-management and glycaemic control. These findings suggest that although knowledge and reported self-management were generally favourable, achieving satisfactory glycaemic control remained challenging.

Sociodemographic Characteristics

The mean age of respondents was 57 ± 11 years, with most participants aged 51–70 years. This finding is consistent with previous Nigerian studies among people with type 2 diabetes.^{24–26} The predominance of older adults may reflect the increasing risk of diabetes with advancing age, related to insulin resistance, declining β -cell function and cumulative metabolic risk.¹² Females constituted 65.7% of the study population, similar to findings from other Nigerian studies.^{24,27} Differences in health-seeking behaviour, healthcare utilisation and survival patterns may contribute to this female predominance, although these factors were not specifically examined in the present study.

Most respondents were married, and the predominance of Nupe and Muslim participants reflects the demographic characteristics of the Bida setting. More than half reported monthly incomes below the minimum wage used in the study. Socioeconomic circumstances may influence access to medications, dietary choices, transportation and the ability to sustain recommended self-management practices. However, these pathways were not independently assessed and should therefore be interpreted cautiously.

Clinical Characteristics and Treatment

Most respondents had been diagnosed with diabetes within the preceding five years, with a mean duration of approximately 3.5 years. This was shorter than durations reported in some studies from Southern Nigeria.^{24,26,27} Differences may reflect variations in study populations, referral patterns, health-seeking behaviour and access to specialist care.

Oral hypoglycaemic agents alone were the most frequently reported treatment modality, followed by combined oral hypoglycaemic agents and lifestyle modification. Treatment modality, however, should not be interpreted as evidence of medication adherence because adherence was not independently measured. Similarly, the prescription of pharmacological therapy does not establish that medicines were taken consistently or correctly. Hypertension was the most common comorbidity, consistent with the frequent coexistence of diabetes and hypertension due to shared metabolic and vascular risk factors.²⁹ The presence of comorbidities may also increase treatment burden and complicate diabetes self-management.

Glycaemic Control

The mean HbA1c was $7.9 \pm 1.83\%$, while 68.6% of respondents had poor glycaemic control based on the prespecified threshold of $\geq 7.0\%$. Only 31.4% achieved good glycaemic control. This indicates that inadequate glycaemic control remains common among patients receiving routine outpatient care.

The finding is broadly comparable with reports from other Nigerian studies. Okoye et al. reported a mean HbA1c of 8.9% and poor glycaemic control in 72.8% of participants, while Osuji et al. and Ufuoma et al. reported mean HbA1c values of 7.72% and 8.2%, respectively, with substantial proportions of patients inadequately controlled.^{24,26,27} Differences between studies may reflect variations in disease duration, treatment regimens, healthcare access, socioeconomic circumstances and definitions of glycaemic control.

The high proportion of participants with poor glycaemic control despite relatively favourable self-management findings is particularly noteworthy. Glycaemic control is influenced by several interacting factors, including disease progression, β -cell function, treatment adequacy, medication adherence, dietary intake, physical activity, comorbidities and socioeconomic circumstances. Thus, good knowledge or favourable reported behaviours may not necessarily result in satisfactory HbA1c levels.

Diabetes Self-Care Knowledge

In this study, 45 (64.3%) respondents demonstrated good diabetes self-care knowledge. This finding is comparable with previous studies reporting relatively favourable diabetes self-care knowledge among Nigerian and African populations.^{30–32} Jackson et al. reported that 79.5% of Nigerian patients with type 2 diabetes achieved an overall self-care knowledge score of at least 70%.³³

The relatively favourable level of knowledge in the present study may partly reflect repeated exposure to diabetes education during clinic attendance. However, knowledge alone may not translate into sustained behavioural change. Financial resources, family support, cultural practices, food availability, treatment burden and healthcare access may influence the ability of patients to implement what they know. The present finding also differs from studies reporting lower knowledge levels, possibly because of differences in educational opportunities, socioeconomic characteristics, healthcare access, instruments and thresholds used for assessment.³⁴

Overall Self-Management Practices

Overall, 60 (85.7%) respondents were classified as having optimal self-management practices, while 10 (14.3%) had suboptimal practices. This relatively high proportion is encouraging and is consistent with reports of favourable self-management behaviours among some Nigerian patients with diabetes.²⁷

The original DSMQ assesses four principal domains: Glucose Management, Dietary Control, Physical Activity and Health-Care Use.³⁵ Because self-management was assessed using self-reported behaviour, recall difficulties and social-desirability bias may have resulted in over-reporting of desirable practices. The findings should therefore be interpreted as reported rather than objectively verified self-management.

Specific Self-Management Domains

Glucose Management

Glucose Management had the highest proportion of respondents classified as having optimal performance (92.9%). However, this domain should not be interpreted simply as a measure of blood-glucose monitoring. The DSMQ Glucose Management domain incorporates glucose monitoring, medication-taking and other glucose-management behaviours.³⁵ Therefore, the present finding indicates favourable performance in the broader domain and does not establish that respondents routinely or accurately monitored their blood glucose.

Dietary Control and Physical Activity

Dietary Control and Physical Activity were each classified as optimal in 61.4% of respondents. Although these findings represent a majority, they also indicate important areas for improvement. Dietary practices may be influenced by cultural preferences, household food choices, availability and affordability, particularly in a population where more

than half reported incomes below the minimum wage. Physical activity may similarly be affected by age, comorbidities and physical limitations. These factors were not directly examined and therefore remain possible explanations rather than established determinants.

These findings support the importance of individualised counselling that is culturally appropriate and economically realistic, rather than relying solely on generic dietary and exercise advice.

Health-Care Use

Health-Care Use was classified as optimal in 71.4% of respondents. This may reflect engagement with healthcare services among patients receiving care at a tertiary facility. However, healthcare attendance does not necessarily indicate adherence to medication or other aspects of recommended diabetes management and should not be considered a surrogate for treatment effectiveness.

Medication Adherence

Medication adherence deserves separate consideration because it was not independently measured in this study. Although 92.9% of respondents were receiving pharmacological treatment, this cannot be interpreted as evidence of good medication adherence. Previous Nigerian research has demonstrated relationships between medication adherence, self-management and glycaemic outcomes, but adherence requires direct assessment.³⁶ Future studies should therefore incorporate a validated adherence measure or objective indicators such as pharmacy refill records or pill counts.

Association Between Knowledge, Self-Management and Glycaemic Control

A statistically significant association was observed between diabetes self-care knowledge and overall self-management practices ($\chi^2=5.973$, $p=0.015$). Respondents with good knowledge were more frequently represented among those with optimal self-management. This is behaviourally plausible because knowledge may facilitate informed decisions regarding diet, physical activity, treatment and healthcare utilisation. Previous Nigerian studies have similarly demonstrated relationships involving diabetes knowledge and behavioural factors.^{1,30-33} However, the cross-sectional design does not establish that greater knowledge caused better self-management.

A significant association was also observed between self-care knowledge and glycaemic control. Among respondents with good glycaemic control, 21 (95.5%) had good self-care knowledge compared with 24 (50.0%) among those with poor glycaemic control. This finding is consistent with evidence supporting the relevance of diabetes self-management to glycaemic outcomes.^{27,37} Nevertheless, the analysis was unadjusted and therefore potential confounding by age, education, income, disease duration, treatment modality and comorbidity cannot be excluded.

The Knowledge–Self-Management–Glycaemic Control Gap

An important finding was the apparent discrepancy between knowledge, reported self-management and glycaemic outcomes. Although 64.3% had good self-care knowledge and 85.7% reported optimal self-management practices, only 31.4% achieved good glycaemic control. This suggests that diabetes outcomes depend on more than patient knowledge and reported behaviour.

Disease progression, treatment intensity, medication adherence,

comorbidities and socioeconomic circumstances may contribute to this gap.³⁷ Diabetes management should therefore combine patient education with regular assessment of treatment adequacy, adherence and practical barriers to dietary and physical activity recommendations.

Foot Care

Foot care was not independently assessed using the DSMQ in this study; therefore, no conclusion can be drawn regarding the prevalence or quality of foot-care practices or their relationship with glycaemic control. Nevertheless, foot care remains an important component of comprehensive diabetes self-management. Nigerian studies have demonstrated important gaps in diabetic foot-care knowledge and practice.³⁸ Future studies should incorporate a validated foot-care instrument where comprehensive assessment of diabetes self-management is intended.

Clinical Implications

The findings suggest that diabetes education is reaching many patients, but the persistence of poor glycaemic control indicates that education alone is insufficient. Healthcare providers should distinguish between what patients know, what they report doing and their objective clinical outcomes. Poor HbA1c despite apparently favourable self-management should prompt review of treatment adequacy, medication adherence, comorbidities and socioeconomic barriers. Dietary advice should be culturally and economically appropriate, while physical activity recommendations should consider age, comorbidities and functional capacity.

Limitations

This study has several limitations. The relatively small sample size of 70 participants and single-centre setting limit the precision and generalisability of the findings. The cross-sectional design permits assessment of associations but does not establish temporal or causal relationships. Self-reported self-management practices may also be affected by recall and social-desirability bias.

The sample-size calculation was based on diabetes prevalence in the general North-Central Nigerian population rather than the expected prevalence or effect size of the principal outcomes among patients with established diabetes. Finally, the analyses were primarily unadjusted and did not account for potential confounding by factors such as age, education, income, duration of diabetes, treatment modality and comorbidity. The observed relationships should therefore be interpreted as associations rather than independent effects.

Conclusion

Most participants had good diabetes self-care knowledge and reported optimal self-management practices, but fewer than one-third achieved good glycaemic control. Diabetes self-care knowledge was significantly associated with self-management practices and glycaemic control in the unadjusted analysis. The findings suggest a gap between reported self-management and glycaemic outcomes. However, the cross-sectional design, small single-centre sample and unadjusted analyses mean that the observed associations should be interpreted as associations rather than causal effects.

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